SAN BERNARDINO COUNTY STORMWATER PROGRAM

MODEL WATER QUALITY MANAGEMENT PLAN GUIDANCE

MARCH 24, 2004

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List of Acronyms

BMP	**Best management practice**
CASQA	**California Stormwater Quality Association**
CC&Rs	**Covenants, conditions, and restrictions**
CDFG	**California Department of Fish and Game**
C-Factor	**Coefficient of runoff**
CWA	**The federal Clean Water Act**
HCOC	**Hydrologic Conditions of Concern**
HOA	**Home owners association**
NPDES	**National Pollutant Discharge Elimination System**
O & M	**Operations and maintenance**
POA	**Property owners association**
RBMP	**Regional-based best management practice**
RWQCB	**Santa Ana Regional Water Quality Control Board**
SAWPA	**Santa Ana Watershed Project Authority**
SIC code	**Standard Industrial Classification code**
SUSMP	**Standard Urban Stormwater Mitigation Plan**
TMDL	**Total Maximum Daily Load**
USACOE	**United States Army Corps of Engineers**
USEPA	**United States Environmental Protection Agency**
USGS	**United States Geological Survey**
WQI	**Water quality inlet**
WQMP	**Water Quality Management Plan**

Section 1
WQMP Process

1.1 Introduction

Santa Ana Regional Water Quality Control Board (RWQCB) Order Number R8-2002-0012, NPDES Permit No. CAS618036 (Permit) requires post-construction Best Management Practices (BMPs) to be implemented for new development and significant redevelopment, for both private and public agency projects. Stormwater BMPs for construction activities are also required, and construction activities are regulated by the statewide General Permit for Storm Water Discharges from Construction Activity (Order No. 99-08-DWQ: NPDES No. CAS000002).

The purpose of the Model Water Quality Management Plan (WQMP) is to guide the Permittees that have land-use planning and development authority, in the development and implementation of a program to minimize the detrimental effects of urbanization on the beneficial uses of receiving waters, including effects caused by increased pollutant loads and changes in hydrology. This Model WQMP guidance document provides the framework to be followed by project proponents for the development and implementation of a project WQMP to minimize the adverse effects of development and redevelopment projects on receiving waters. These effects may be minimized through the implementation of site designs that reduce runoff and pollutant transport by minimizing impervious surfaces and maximizing onsite infiltration, source-control BMPs, and/or either on-site structural treatment control BMPs, or participation in regional or watershed-based structural treatment control BMPs. A project WQMP shall meet all the standards of compliance and any other requirements specified in the Permit. The Model WQMP will be reviewed and approved by the RWQCB in accordance with the Permit. The RWQCB will solicit public review and comment prior to approval.

Once approved by the Executive Officer of the RWQCB, the Model WQMP becomes an enforceable component of the Permit, applicable to all Permittees, and represents the standard for Permit compliance. The Permittees are encouraged to adapt the model WQMP to meet the specific circumstances in their communities. However; the adoption and implementation of significantly different requirements, and specifically, less stringent requirements than contained in the model WQMP, could cause a Permittee to be in noncompliance with the Permit. Permittees that do not fully comply with the Permit are subject to regulatory enforcement actions and third-party lawsuits as provided under the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act.

This guidance document provides a WQMP framework that local agencies can adopt. Local agencies can then require sponsors of development and redevelopment projects to use the framework to develop a WQMP to be implemented during the project

planning, design, approval, permitting, construction, acceptance, and occupancy phases.

The WQMP development and approval process requires specific actions and roles for participants. Participants and roles include:

Principal Permittee (San Bernardino County Flood Control District): The Principal Permittee is responsible for overseeing the development and implementation of the area-wide storm water program, including development and maintenance of a model WQMP for local agency new development and significant redevelopment programs.

Permittees (The Co-Permittees, referred to herein as Agencies): Each Agency is individually responsible for compliance with the Permit. Each Agency with land use planning and development authority (The San Bernardino County Flood Control District is the only Permittee without land use planning and development authority) is responsible for implementing a program in their jurisdiction that requires the development and implementation of a WQMP for all projects subject to the WQMP requirements, reviewing and approving WQMPs submitted by project proponents, and verifying that approved WQMPs are implemented for these projects. Local agencies are also required to periodically update the WQMP guidance to reflect changes in the Clean Water Act 303(d) list of impaired water bodies. Local agencies may elect to require a WQMP for any project

Project Proponents (Private and Public Agency): Private and public agency proponents of projects that require WQMPs are responsible for developing WQMPs in accordance with local Agency requirements, submitting the WQMP to the local Agency for review and approval, implementing the WQMP until a change in ownership occurs, and transferring WQMP implementation responsibilities to the new owner.

Attachment A presents a template for project proponents to follow during development of a WQMP for submittal to the Agency for review. Use of the template will provide for consistent formatting, and ensure submittal of the minimum acceptable level of documentation for Agency review. However; Agencies may require additional documentation prior to project approval.

1.2 Projects Requiring a WQMP

Project proponents for development and redevelopment projects that either 1) fall into the eight Permit-specified categories listed in Table 1-1 (Category Projects), or 2) are not Category Projects but have a precise plan of development or subdivision of land (Non-Category Projects), must develop, submit, and implement a WQMP. In addition, the Agency may require development of a WQMP for any project.

1.3 Non-Category Projects

WQMPs for Non-Category projects are required to:

- Incorporate and implement Site Design BMPs, as determined to be appropriate during the site planning and approval process. These BMPs and the selection process are described in Section 2.5.1. (OC 2003)

- Incorporate and implement all applicable Source Control BMPs as listed in Table 2-2. These BMPs and the selection process are described in Section 2.5.2.

1.4 Category Projects

WQMPs for Category projects are required to:

- Incorporate and implement Site Design BMPs as specified in Section 2.5.1. Justification is required for any Site Design BMPs not incorporated into the Project (OC 2003).

- Incorporate and implement all Source Control BMPs as specified in Section 2.5.2, unless not applicable to the project due to project characteristics, or infeasible. Justification is required for any Source Control BMP not incorporated into the project (OC 2003).

- Either incorporate and implement Treatment Control BMPs as specified in Section 2.5.3, by including a selection of such BMPs into the project design; or participate in or contribute to an approved regional-based treatment program as specified in Section 3. Site Design and Source Control BMPs as specified in Sections 2.5.1 and 2.5.2 are required for projects participating in regional-based treatment programs (OC 2003).

- The combination of Site Design, Source Control and/or Treatment Control BMPs or Regional-based treatment program must adequately address all identified pollutants and hydrologic conditions of concern (OC 2003).

Table 1-1
Permit-Specified Project Categories

1. All significant re-development projects. Significant re-development is defined as the addition or creation of 5,000 or more square feet of impervious surface on an already developed site. This includes, but is not limited to, additional buildings and/or structures, extension of existing footprint of a building, construction of parking lots, etc. Where redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development, and the existing development was not subject to SUSMPs, the design standards apply only to the addition, and not the entire development. When the redevelopment results in an increase of more than fifty percent of the impervious surfaces, then a WQMP is required for the entire development (new and existing).
2. Home subdivisions of 10 units or more. This includes single family residences, multi-family residence, condominiums, apartments, etc.
3. Industrial/commercial developments of 100,000 square feet or more. Commercial developments include non-residential developments such as hospitals, educational institutions, recreational facilities, mini-malls, hotels, office buildings, warehouses, and light industrial facilities.
4. Automotive repair shops (with SIC codes 5013, 5014, 5541, 7532- 7534, 7536-7539).
5. Restaurants where the land area of development is 5,000 square feet or more.
6. Hillside developments of 10,000 square feet or more which are located on areas with known erosive soil conditions or where the natural slope is twenty-five percent or more.
7. Developments of 2,500 square feet of impervious surface or more adjacent to (within 200 feet) or discharging directly into environmentally sensitive areas such as areas designated in the Ocean Plan as areas of special biological significance or waterbodies listed on the CWA Section 303(d) list of impaired waters.
8. Parking lots of 5,000 square feet or more exposed to storm water. Parking lot is defined as land area or facility for the temporary storage of motor vehicles.
Notes: 1. A subdivision of land may require a WQMP. 2. For Standard Industrial Classification (SIC) codes, see: www.osha.gov/oshstats/sicser.html 3. For the current list of 303(d) impaired waterbodies, contact the local Regional Water Quality Control Board. Table B-1 in Attachment B contains a reference list based upon the 2002 303(d) list.

1.5 WQMP Development Approach

Table 1-1 illustrates the overall approach for developing a WQMP for new development and redevelopment projects.

Table 1-2
WQMP Development Approach

STEP	APPROACH
1	Determine if WQMP is Required
2	Determine Pollutants of Concern (see Table 2-1 and Attachment C)
3	Determine Hydrologic Conditions of Concern
4	Incorporate Site Design BMPs (see Section 2.5.1.1)
5	Incorporate Source Control BMPs (see Table 2-2
6*	Incorporate Treatment Control BMPs (see Table 2-3)
7*	Determine Operation and Maintenance Requirements and Responsible Party
8*	Determine Funding Source for Operations and Maintenance and Responsible Party
9	Complete WQMP Template with Information from Steps 1 Thru 7
10	Submit WQMP for Agency Review and Approval

* If the individual project is part of an approved regional-based water quality control program, steps 6-8 will require identification of the regional-based program, and compliance with all requirements specified in Section 3 of the Model WQMP.

To assist in determining if a WQMP is required for a project, Pages A-2, A-3 and A-4 of the WQMP Template (Attachment A) shall be completed and submitted to the Agency for review and approval. If the Agency determines that a WQMP is required, then a WQMP must be developed, submitted, and approved prior to the Agency issuing grading, building, or occupancy permits.

A WQMP is also required to be developed and implemented for Agency projects that qualify as Category Projects or Non-Category Projects, regardless of whether Agency permits are required. WQMP requirements must be incorporated into the project design and shown on project plans prior to bidding for construction contracts or similar contracts, and before allowing the project to commence (OC 2003).

Failure to develop or submit a WQMP for Category or Non-Category projects will result in denial of grading, building, and occupancy permits. Failure to implement a WQMP in conjunction with the project will result in denial of occupancy permits or approvals. Failure to implement a WQMP after construction of the project may result in enforcement actions by the Agency and referral to the RWQCB for additional enforcement actions.

Section 2
WQMP Contents

2.1 Project Information and Certification

The following general information is required:

- The name of the owner of the project and the site address.
- The name and contact information for the project proponent.
- The tract or discretionary permit number(s), condition number(s), and any acquired waste discharge identification numbers (WDIDs).
- A detailed project description (type, size, homeowners association or property owners association information) with a location map and site plan identifying storm drain facilities and structures, structural BMPs, stormwater flow (drainage), and the receiving water. The location and site plan may be shown on the same map.
- A site description identifying the watershed(s) that the project lies within and any pre-existing water quality problems that have been identified.
- A signed statement (with date) certifying that the provisions of the WQMP have been accepted by the applicant, and that the applicant will transfer responsibility for complying with the provisions of the WQMP to future owners, by means of a transferability statement.

2.2 Identify Pollutants of Concern

The project WQMP for all Category projects must identify all pollutants that are expected from the proposed project land use or category. Site-specific conditions must also be considered as potential pollutant sources, such as legacy pesticides or nutrients in site soils as a result of past agricultural practices or hazardous materials in site soils from industrial uses. Hazardous material sites that have been remediated and do not pose a current threat, and will not pose a future threat, to stormwater quality, are not considered a pollutant of concern (OC 2003). Table 2-1 provides guidance for determining expected pollutants of concern and lists pollutants that are potentially associated with general land use types. Additional information about pollutants of concern is provided within Attachment C.

To identify pollutants of concern in receiving waters, each Category project proponent shall, at a minimum, do the following (OC 2003):

1 For each of the proposed project discharge points, identify the proximate receiving water for each point of discharge and all downstream receiving waters, using hydrologic unit basin numbers as identified in the most

recent version of the Water Quality Control Plan for the Santa Ana Basin prepared by the RWQCB.

2 Identify each proximate and downstream receiving water identified above that is listed on the most recent list of Clean Water Act Section 303(d) (CWA 303(d) list) impaired water bodies (Attachment B, Table B-1). List any and all pollutants for which the receiving waters are impaired.

3 Compare the list of pollutants for which the receiving waters are impaired with the pollutants expected to be generated by the project (as discussed in Section 2.2, Part 1, above).

Potential pollutants identified in Table 2-1 require an offset if the potential pollutant is also identified as a pollutant causing or contributing to an impairment of water quality standards. Pollutants requiring an offset are those on the State's most recently approved CWA 303(d) list. The discharge of any listed pollutant to an impaired water body on the CWA 303(d) list shall require an offset (e.g., no net loading) for any additional loading from the proposed project to ensure no further degradation of the impaired water body. Attachment B, Table B-1 contains a list of CWA 303(d) list impaired water bodies and the pollutants attributed to these impairments.

Table 2-1 (adapted from OC 2003)

Pollutants of Concern for Project Categories and Land Uses

Project Categories/Land Uses	General Pollutant Categories								
	Bacteria/Virus	Heavy Metals	Nutrients	Pesticides	Organic Compounds	Sediments	Trash & Debris	Oxygen Demanding Substances	Oil & Grease
Residential Development (Detached)	E	N	E	E	N	E	E	E	E
Residential Development (Attached)	P	N	E	E	N	E	E	P(1)	P(2)
Industrial/Commercial Development (>100,000 ft^2)	P(3)	P	P(1)	P(1)	P(5)	P(1)	E	P(1)	E
Automotive Repair Shops	N	P	N	N	E(4,5)	N	E	N	E
Restaurants (>5,000 ft^2)	E	N	N	N	N	N	E	E	E
Hillside Development (>10,000 ft^2)	E	N	E	E	N	E	E	E	E
Parking Lots (>5,000 ft^2)	P(6)	E	P(1)	P(1)	E(4)	P(1)	E	P(1)	E
Streets/Highways/Freeways	P(6)	E	P(1)	P(1)	E(4)	E	E	P(1)	E

E = expected.
P = potential.
N = not expected
(1) A potential Pollutant if landscaping or open area is present on site.
(2) A potential Pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves animal waste.
(4) Including petroleum hydrocarbons.
(5) Including solvents.
(6) Bacterial indicators are routinely detected in pavement runoff.

2.3 Identify Hydrologic Conditions of Concern

New development and redevelopment projects typically result in an increased proportion of impervious surfaces, a reduction in the proportion of porous or pervious surface at the project site, and changes to the drainage network. Common changes to the hydrologic regime resulting from development include increased runoff volume and velocity; reduced infiltration; increased flow frequency, duration, and peaks; and faster time to reach peak flow. If the project covers previous natural sediment source areas with impervious surfaces, or otherwise modifies these sediment source areas, the amount of sediment available for transport in the downstream flows may be reduced. Storm runoff could fill this sediment-carrying capacity by eroding a downstream channel. Downstream channel reaches may experience excessive erosion, excessive sedimentation, or both. These changes have the potential to adversely impact downstream channels and habitat integrity. A change to the hydrologic regime would be considered a Hydrologic Condition of Concern (HCOC) if the change would have a significant adverse impact on downstream natural channels and habitat integrity, alone or in conjunction with impacts of other projects.

The Permit requires the Agencies to minimize changes in hydrology from development projects and to ensure that post-development runoff rates and velocities from a site do no adversely impact downstream erosion or stream habitat. The first step toward achieving these goals is to minimize the amount of water directed to impervious surfaces, and to maximize the proportion of pervious surfaces, to allow as much onsite infiltration as possible. The goal is for the runoff rates, volumes, velocities, and flow duration for the post-development condition to mimic those of the pre-development condition. More information on maximizing onsite infiltration and minimizing impacts to stream channels can be found in Start at the Source (Bay Area Stormwater Management Agencies Association, 1999) and Low Impact Development Design Strategies, An Integrated Design Approach (Prince George's County, Maryland; Department of Environmental Resources, 1999).

Studies are currently underway (conducted by Ventura County Watershed Protection District, and the Stormwater Monitoring Coalition under the guidance of the Southern California Coastal Water Research Project) to determine the susceptibility of southern California streams to excessive erosion and habitat degradation due to urbanization, and to provide recommendations on methods to minimize negative impacts. In the future, the Principal Permittee may develop protective guidelines for HCOCs for development projects, based on recommendations from these or other studies. However; until such guidelines are developed and approved, the following procedure must be followed for all Category projects:

1. For all Category projects, a WQMP must be developed and implemented in full accordance with this guidance, including but not limited to, provisions for Site Design BMPs, Source Control BMPs, and/or structural Treatment Control

BMPs, to minimize pollutants of concern in stormwater discharges from the project site.

2. Determine if the project will create a HCOC:

   A. The project does not create a HCOC if all downstream conveyance channels, that will receive runoff from the project, are engineered, hardened (concrete, riprap or other), and regularly maintained to ensure design flow capacity, and no sensitive stream habitat areas will be affected. Engineered, hardened, and maintained channels include channel reaches that have been fully and properly approved for construction and hardening to achieve design capacity, whether construction of the channels is complete. Discharge from the project must be in full compliance with Agency requirements for connections and discharges to the MS4, including both quality and quantity requirements, and the project must be permitted by the Agency for the connection or discharge to the MS4.

   B. The project does not create a HCOC if runoff rates, volumes, velocities, and flow duration for the post-development condition do not exceed those of the pre-development condition for 1-year and 2-year frequency storm events. Site design concepts that minimize imperviousness, and maximize pervious areas and infiltration on site, are one approach to achieve this condition for a project. This condition must be substantiated with hydrologic modeling methods that are acceptable to the Agency, to the U.S. Army Corps of Engineers (USACOE), and to local watershed authorities.

   C. If the conditions in part A or B above cannot be demonstrated for the project, then the project does create a HCOC, and an evaluation must be performed according to (3) below.

3. The WQMP for projects that create a HCOC must include an evaluation of whether the project will adversely impact downstream erosion, sedimentation or stream habitat. The Agency may require that the evaluation be conducted by a registered civil engineer in the State of California, with experience in fluvial geomorphology. The evaluation must include:

   A. An evaluation of potential impacts to all downstream channel reaches.

   B. Consideration of the hydrology of the entire watershed. Review all applicable drainage area master plans to the extent available, to identify BMP requirements for new development that address cumulative inputs from development in the watershed (OC 2003).

C. Consultation with all applicable agencies including USACOE; local watershed authorities (e.g. San Timoteo Watershed Management Authority and SAWPA [Santa Ana Watershed Project Authority]); U.S. Geological Survey (USGS); California Dept. of Fish & Game (CDFG); and the Principal Permittee; to determine any areas of potential hydrologic impact.

D. An evaluation of any available hydrologic modeling results. Modeling may have been performed by USGS, USACOE, local watershed authorities, the Principal Permittee, or other local jurisdiction.

E. A field reconnaissance to evaluate any natural or partially natural downstream reaches, or other sensitive habitat. The field reconnaissance must evaluate representative downstream conditions, including undercutting erosion, slope/bank stability, vegetative stress (due to flooding, erosion, water quality degradation, or loss of water supplies), and the area's susceptibility to adverse impacts resulting from an altered flow regime or change in sediment transport (OC 2003).

F. A report that summarizes the findings of evaluation components A through E above, and that considers the project's location, topography, soil and vegetation conditions, proportion of impervious surfaces, natural and infrastructure drainage features, and any other relevant hydrologic and environmental factors to be protected specific to the project's watershed (OC 2003). The report must provide a determination of whether the project will adversely impact any downstream erosion, sedimentation or stream habitat, and identify any areas where adverse impacts are expected.

4. If the evaluation specified in (3) above, determines that adverse impacts to downstream erosion, sedimentation or stream habitat will occur, then the project proponent must:

   A. Conduct hydrologic modeling of the project and the potentially impacted areas, according to modeling standards recommended by the Agency or local watershed authority, for the 1-year, 2-year, and 5-year frequency storm events, at a minimum.

   B. Ensure that the project will be consistent with any approved master plans of drainage or analogous plans or programs.

   C. Implement Site Design BMPs as specified in Section 2.5.1, and recommend any additional BMPs that will be implemented to mitigate the adverse impacts identified in (3.F) above.

5. The Agency may establish additional requirements applicable to HCOCs.

.

2.4 Watershed Impact of Project

The project proponent must evaluate the expected pollutants and/or hydrologic conditions of concern associated with the project, and determine whether the project will cause any significant impact(s) to any downstream receiving waters, alone or in conjunction with other projects in the watershed. The WQMP must effectively mitigate any adverse impacts through the incorporation and implementation of BMPs.

2.5 Best Management Practices

A WQMP must describe water quality controls, commonly referred to as Best Management Practices (BMPs), which will be implemented for a project. The BMPs shall be incorporated into the project to minimize the impact from identified pollutants of concern and hydrologic conditions of concern. Where pollutants of concern include pollutants that are listed as causing or contributing to impairments of receiving waters, BMPs must also be selected so that the project does not cause or contribute to an exceedance of receiving water quality standards.

Strategies to minimize the pollutants in runoff from the project site include site design BMPs, source control BMPs, and/or treatment control BMPs.

> ***Site Design BMPs*** aim to incorporate site features such as vegetation to reduce and control post-development runoff rates. Because Site Design BMPs reduce direct runoff and increase infiltration onsite, they reduce the transport mechanism for moving pollutants off site, and help mitigate the differences between pre- and post-development hydrographs. This minimizes changes in flow regime and reduces the size of necessary structural treatment control BMPs to treat runoff prior to discharge from the site or at regional facilities. Therefore, site design is usually the most efficient and cost effective way to minimize adverse impacts. All projects shall include Site Design BMPs as specified in Section 2.5.1.
>
> ***Source Control BMPs*** reduce the potential for stormwater runoff and pollutants from coming into contact with one another. Source Control BMPs are defined as any administrative action, design of a structural facility, usage of alternative materials, and operation, maintenance, inspection, and compliance of an area that aims to eliminate or reduce stormwater pollution. Each new development and significant redevelopment project is required to implement appropriate Source Control BMP(s). Table 2-2 lists examples of source control BMPs.
>
> ***Treatment Control BMPs*** are defined as any engineered system designed and constructed to treat the adverse impacts of stormwater and urban runoff pollution. These BMPs may remove pollutants by filtration, media absorption,

or other physical, biological, or chemical process. Table 2-3 lists examples of Treatment Control BMPs.

Site Design BMPs, ***Source Control BMPs***, and ***Treatment Control BMPs*** are most effective when used in conjunction with one another to protect water quality. Site Design and Source Control BMPs may be implemented to a level that significantly reduces the size or extent to which Treatment Control BMPs need to be implemented.

Treatment Control BMPs may be eliminated, in some cases, if Site Design BMPs and Source Control BMPs are demonstrated to effectively eliminate pollutant discharges. Upon presentation of a WQMP with sufficient site design and source controls to fully meet the WQMP objectives shown in Section 1.1, and upon specific written request by the project proponent, the Agency may approve the WQMP without the addition of treatment control BMPs. The project proponent is fully responsible for the presentation of evidence, including but not limited to monitoring data and special studies, to support the attainment of all Permit requirements and WQMP objectives, through site design and source control BMPs only.

Additional BMP reference material is contained within the California Stormwater Quality Association's, "Stormwater Best Management Practices Handbook for New Development and Redevelopment" and the "Stormwater Best Management Practices Handbook for Industrial and Commercial" (CASQA, 2003). The most recent editions of the CASQA handbooks are acceptable for use in the development of BMPs for inclusion in the WQMP. The most recent editions of the CASQA handbooks can be downloaded at www.cabmphandbooks.com, and supersede references in the Permit to the 1993 handbooks published by the Stormwater Quality Task Force (the predecessor of CASQA).

The following Site Design and Source Control BMPs must be implemented for all projects, unless determined to be infeasible, or an equally effective alternative is implemented. Planned implementation details must be described within the WQMP. Where a required Site Design or Source Control BMP is infeasible, justification and/or alternative practices for eliminating or reducing pollutants must be provided. Site Design BMPs are described in Section 2.5.1, below, and Table 2-2 lists Source Control BMPs and references the BMP ID number used in the 2003 CASQA Handbook.

Table 2-2 **Source Control BMPs***	
Routine Non-Structural	Education of Property Owners
	Activity Restrictions
	Spill Contingency Plan
	Employee Training/Education Program
	Street Sweeping Private Street and Parking Lots
	Common Areas Catch Basin Inspection
	Landscape Planning (SD-10)
	Hillside Landscaping
	Roof Runoff Controls (SD-11)
	Efficient Irrigation (SD-12)
	Protect Slopes and Channels
	Storm Drain Signage (SD-13)
	Inlet Trash Racks
	Energy Dissipators
	Trash Storage Areas (SD-32) and Litter Control
Individual Project Features	Fueling Areas (SD-30)
	Air/Water Supply Area Drainage
	Maintenance Bays and Docks (SD-31)
	Vehicle Washing Areas (SD-33)
	Outdoor Material Storage Areas (SD-34)
	Outdoor Work Areas (SD-35)
	Outdoor Processing Areas (SD-36)
	Wash Water Controls for Food Preparation Areas
Alternate Material	Pervious Pavement (SD-20)
	Alternative Building Materials (SD-21)
*Any BMP including reference such as (SD-30) is included in the California Stormwater Quality Association, Stormwater Best Management Practices Handbook for New Development and Redevelopment (CASQA, January 2003).	

Table 2-3 **Design Basis of Treatment Control BMPs**	
Treatment Control BMP	**Design Basis**
Vegetated Buffer Strips (TC-31)	Flow Based
Vegetated Swale (TC-30)	
Multiple Systems (TC-60)	
Manufactured/Proprietary Devices (MP series)	
Bioretention (TC-32)	Volume Based
Wet Pond (TC-20)	
Constructed Wetland (TC-21)	
Extended Detention Basin (TC-22)	
Water Quality Inlet (TC-50)	
Retention/Irrigation (TC-12)	
Infiltration Basin (TC-11)	
Infiltration Trench (TC-10)	
Media Filter (TC-40)	
Manufactured/Proprietary Devices (MP series)	

2.5.1 Site Design BMPs

All projects shall implement Site Design BMPs to minimize any adverse stormwater-related impacts. Projects for which hydrologic conditions of concern have been identified shall control post-development peak stormwater runoff discharge rates and velocities to protect stream habitat and to prevent downstream erosion and sedimentation. Projects can address these objectives by the incorporation of appropriate Site Design BMPs intended to create a project that mimics the predevelopment hydrologic regime. Mimicking a site's predevelopment hydrologic regime may be achieved in all or part by:

- Reducing imperviousness, conserving natural resources and areas, maintaining and using natural drainage courses in the municipal storm drain system, and minimizing clearing and grading.

- Providing runoff storage measures dispersed strategically throughout a site, often accomplished by incorporating a variety of detention and retention facilities into the site's landscaped areas.

- Implementing on-site hydrological functional landscape design and management practices.

These same practices, because they reduce the volume and usually the rate of runoff, also have the benefit of reducing the amount of stormwater that must be treated before being discharged or to be treated in regional facilities. These design principles offer an innovative approach to urban stormwater management by uniformly or strategically integrating stormwater controls throughout the urban landscape. Resources for applying these principles include Start at the Source (Bay Area Stormwater Management Agencies Association, 1999), and Low Impact Development Design Strategies, An Integrated Design Approach (Prince George's County, Maryland; Department of Environmental Resources, 1999).

2.5.1.1 Minimize Stormwater Runoff, Minimize Project's Impervious Footprint, and Conserve Natural Areas

A design can minimize and/or control differences between the pre- and post development site hydrographs by utilizing measures that reduce runoff rates and volumes, and increase infiltration. A reduction in stormwater runoff from a development project using properly designed BMPs can yield a corresponding reduction in the amount of pollutants transported from a site. The undeveloped runoff volume should be determined by considering the project site to be in a natural condition with surface vegetation in place.

The following design options shall be considered and incorporated where applicable and feasible during the site planning and approval process consistent with any applicable General Plan policies, other development standards and regulations, and with any site design BMPs included in an applicable regional or watershed program.

- Maximize the permeable area. This can be achieved in various ways, including but not limited to, increasing building density (number of stories above or below ground) and developing land use regulations seeking to limit impervious surfaces. Decreasing the project's footprint can substantially reduce the project's impacts to water quality and hydrologic conditions, provided that the undeveloped area remains pervious open space.

  Runoff from developed areas may be reduced by using alternative materials or surfaces with a lower Coefficient of Runoff, or "C-Factor". The C-factor is a representation of the ability of a surface to produce runoff. Surfaces that provide higher runoff volumes are represented by higher C-factors. By incorporating more pervious, lower C-factor surfaces into a development, lower volumes of runoff will be produced. Lower volumes and rates of runoff translate directly to lowering treatment requirements.

- Conserve natural areas. This can be achieved by concentrating or clustering development on the least environmentally sensitive portions of a site while leaving the remaining land in a natural, undisturbed condition. Where available, the developer shall refer to biological reports and regulations, as appropriate, to assist in determining sensitive portions of a site. Sensitive areas include, but are not limited to areas necessary to maintain the viability of wildlife corridors, habitat of sensitive species, and wetlands.

- Construct walkways, trails, patios, overflow parking lots, alleys, driveways, low-traffic streets, and other low-traffic areas with open-jointed paving materials or permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials.

- Construct streets, sidewalks, and parking lot aisles to the minimum widths necessary, provided that public safety and a pedestrian friendly environment are not compromised[1]. Incorporate landscaped buffer areas between sidewalks and streets.

- Reduce widths of street where off-street parking is available[2].

- Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.

- Minimize the use of impervious surfaces, such as decorative concrete, in the landscape design.

- Use natural drainage systems.

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[1] Sidewalk widths must still comply with Americans with Disabilities Act regulations and other life safety requirements.

[2] However, street widths must still comply with life safety requirements for fire and emergency vehicle access.

- Where soils conditions are suitable, use perforated pipe or gravel filtration pits for low flow infiltration[3].

- Construct onsite ponding areas, rain gardens, or retention facilities to increase opportunities for infiltration, while being cognizant of the need to prevent the development of vector breeding areas.

- Other comparable site design options that are equally effective.

2.5.1.2 Minimize Directly Connected Impervious Areas

WQMPs shall incorporate the following design characteristics, as appropriate, and incorporate any site design BMPs included in any regional or watershed program that the project relies upon for Treatment Control BMPs.

- Where landscaping is proposed, drain rooftops into adjacent landscaping prior to discharging to the storm drain.

- Where landscaping is proposed, drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping.

- Increase the use of vegetated drainage swales in lieu of underground piping or imperviously lined swales.

- Use one or more of the following:

  - Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings

  - Urban curb/swale system; street slopes to curb; periodic swale inlets drain to vegetated swale/biofilter.

  - Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to municipal storm drain systems.

  - Other comparable design concepts that are equally effective.

- Use one or more of the following features for design of driveways and private residential parking areas:

  - Design driveways with shared access, flared (single lane at street) or wheel strips (paving only under tires); or, drain into landscaping prior to discharging to the municipal storm drain system.

[3]However, projects must still comply with hillside grading ordinances that limit or restrict infiltration of runoff. Infiltration areas may be subject to regulation as Class V injection wells and may require a report to the USEPA. Consult the Agency for more information on use of this type of facility.

- Uncovered temporary or guest parking on private residential lots may be paved with a permeable surface; or designed to drain into landscaping prior to discharging to the municipal storm drain system.

- Other comparable design concepts that are equally effective.

- Use one or more of the following design concepts for the design of parking areas:

  - Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.

  - Overflow parking (parking stalls provided in excess of the Agency's minimum parking requirements) may be constructed with permeable paving.

  - Other comparable design concepts that are equally effective.

2.5.2 Source Control BMPs

Source Control BMPs (routine non-structural BMPs, routine structural BMPs, alternate materials, and BMPs for individual project categories/project features) (Table 2-2) are required for all projects unless they do not apply to the project or are infeasible. If any of the following Source Control BMPs are not included in the project, a justification must be provided in the project WQMP.

Routine Non-Structural BMPS

Education for Property Owners, Tenants, and Occupants

For developments with no Property Owners Association (POA)[4] or POAs of less than fifty (50) dwelling units, practical information materials will be provided to the first residents/occupants/tenants. These materials shall include general good housekeeping practices that contribute to protection of stormwater quality, and BMPs that eliminate or reduce pollution during property improvements (concrete work, pool installation, etc). These materials will be made available by the Agency, and nominal fees to recover the cost of printing may be required by the Agency. The developer shall request these materials in writing at least 30 days prior to intended distribution and shall then be responsible for their timely distribution at the time of occupancy.

For developments with POA or residential projects of more than fifty (50) dwelling units, project conditions of approval will require that the POA provide environmental awareness education materials. The project proponent shall provide the educational materials to residents in cases where there is no POA, and until a POA is formed in other cases. These materials must contain the information required for developments of less than fifty (50) dwellings, plus describe the use of chemicals (including household type) that should be limited to the property, with no discharge of specified wastes via

[4] The term "Property Owners' Association" or POA, as used herein, means a nonprofit corporation or unincorporated association created for the purpose of managing a common interest development [from California Civil Code Sec. 1351 (a)].

hosing or other direct discharge to gutters, catch basins, and storm drains. These materials will be made available by the Agency, may be attached to the WQMP template, and nominal fees to recover the cost of printing may be required by the Agency. The developer shall request these materials in writing at least 30 days prior to intended distribution and shall then be responsible for their timely distribution at the time of occupancy.

Activity Restrictions
If a POA is formed, conditions, covenants, and restrictions shall be required for the purpose of water quality protection. Alternatively, use restrictions may be developed by a building operator through lease terms, or other mechanisms. Pesticide application in common areas must be performed by an applicator certified by the California Department of Pesticide Regulation.

Spill Contingency Plan
A "Spill Contingency Plan" (Business Emergency/Contingency Plan Guidelines and Forms) shall be provided in accordance with Section 6.95 of the California Health and Safety Code.

Employee Training/Education Program
For developments where people will be employed to perform activities that may impact water quality, BMP training and education programs must be provided. Materials based upon information provided through the Area-wide Stormwater Program Public Education Program may be used. Training and education program commitments may be conveyed, for development that is constructed for an unspecified use, to a POA or development purchaser.

Street Sweeping Private Streets and Parking Lots
For developments with POAs and privately owned streets and parking lots, the streets and parking lots must be swept at least annually, prior to the storm season in the late summer or early fall, to reduce the amount of sediment, garden waste, and trash entering the storm drain systems.

Common Area Catch Basin Inspection
Drainage facilities (inlets, open channels and basins) must be inspected annually, in the late summer or early fall, and cleaned as needed, or if accumulated sediment/ debris fills 25% or more of the sediment/debris storage capacity of the facility. The party responsible for post-construction operation and maintenance of drainage facilities shall evaluate all portions of the drainage facilities annually to determine the adequacy of the inspection and maintenance frequency, and report the evaluation findings to the Agency.

Routine Structural BMPs

Landscape Planning
Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should

conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels. Plants should be grouped with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Landscaping shall correlate to the climate, soil, related natural resources and existing vegetation of the site, as well as the type of development proposed. Ongoing maintenance consistent with County Administrative Design Guidelines **(available at: http://www.co.san-bernardino.ca.us/landuseservices/Informational%20Handouts/Administative%20Design%20Guidelines-Jan%202002.pdf)** or local equivalent, plus fertilizer and pesticide usage consistent with the instructions contained on product labels and with the regulations administered by the State Department of Pesticide Regulation shall be implemented.

Hillside Landscaping
Hillside areas that are disturbed by project development shall be landscaped with deep-rooted, drought-tolerant plant species selected for erosion control, satisfactory to the Agency (OC 2003).

Roof Runoff Controls
Residential and commercial sites must be designed to contain and infiltrate roof runoff, or direct roof runoff to vegetative swales or buffer areas.

Efficient Irrigation
Irrigation methods should be utilized to minimize runoff of excess irrigation water across impervious surfaces and into the stormwater conveyance system. Such measures include employing rain-triggered shutoff devices to eliminate or reduce irrigation during and immediately after precipitation, using mulches (such as wood chips) to minimize sediment in runoff and to maintain soil infiltration capacity, and coordinating design of the irrigation system and landscape to minimize overspray and runoff. Irrigation systems should consider the use of flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or water supply lines. Water conservation devices such as programmable irrigation timers and soil moisture sensors should also be considered.

Protect Slopes and Channels (OC 2003)
Project plans shall include Source-Control BMPs to decrease the potential for erosion of slopes and/or channels, consistent with local codes and ordinances, and with approval of all agencies with jurisdiction (e.g., USACOE, RWQCB, and CDFG). The following design principles shall be considered, and implemented where determined to be applicable and feasible by the Agency:

1. Convey runoff safely from the tops of slopes.

2. Avoid disturbing steep or unstable slopes.

3. Avoid disturbing natural channels.

4. Install permanent stabilization BMPs on disturbed slopes as quickly as possible.

5. Vegetate slopes with native or drought-tolerant vegetation.

6. Control and treat flows in landscaping and/or other controls prior to reaching natural drainage systems.

7. Install permanent stabilization BMPs in channel crossings a quickly as possible, and ensure that increases in runoff velocity and frequency caused by the project do not excessively erode the channel.

8. Install energy dissipators, such as riprap, at the outlets of new storm drains, culverts, conduits or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipators shall be installed in such a way as to minimize impacts to receiving waters.

9. Onsite conveyance channels should be lined, where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are large enough to erode grass or other vegetative linings, riprap, concrete soil cement, or geo-grid stabilization may be substituted or used in combination with grass or other vegetation stabilization.

10. Other design principles that are comparable and equally effective.

Storm Drain Signage
Signage such as notices regarding discharge prohibitions at storm drain inlets to eliminate or reduce dumping and littering are required. The phrase "No Dumping – Flows to Creek," or an equally effective phrase as approved by the NPDES General Committee, must be stenciled on catch basins (inlets) to alert the public as to the destination of pollutants discharged into storm drains. This signage must be maintained and a party responsible for maintenance should be identified in the WQMP.

Inlet Trash Racks
Where appropriate to reduce intake and transport through the storm drain system of large floatable debris, trash racks shall be provided where drainage from open areas enters storm drains.

Energy Dissipator
Energy dissipators such as riprap or other effective materials must be installed at the outlets of new storm drains that enter unlined channels in accordance with applicable Agency specifications, and shall be installed in such a way as to minimize impacts to

receiving waters. Other methods of managing flow velocity and volume must be considered. A useful reference for alternative methods is: "A Primer on Stream and River Protection for the Regulator and Program Manager," by Ann L. Riley, San Francisco Regional Board. The Primer can be accessed on the internet at www.swrcb.ca.gov/rwqcb2/Agenda/04-16-03/Stream%20Protection%20Circular.pdf. (OC 2003)

Trash Storage Areas and Litter Control

Trash container (dumpster) areas shall have drainage from adjoining roofs and pavements diverted around the area(s). Dumpsters shall be leak proof and have attached workable covers. Trash area drains, if any, must not be allowed to discharge offsite, or be connected to the municipal storm drain system. For trash container areas associated with fuel dispensing, vehicle repair/maintenance, and industry, grade and pave the area to eliminate or reduce run-on of storm water to the maximum extent practicable. Trash compactors shall be roofed and set on a concrete pad. The pad shall be a minimum of one foot larger all around than the trash compactor and sloped to drain to a sanitary sewer line.

For developments with POAs, the POA must be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of stormwater. The POAs may contract with their landscape maintenance firms to provide this service during regularly scheduled maintenance, which should consist of litter patrol, proper disposal of pet litter, emptying of trash receptacles in common areas, and noting trash disposal violations by homeowners or businesses and reporting the violations to the Association.

BMPs Applicable to Individual Project Features

Fueling Areas

Areas used for fuel dispensing shall be paved with Portland cement concrete (or; equivalent smooth, impervious surface) with a 2% to 4% slope to eliminate or reduce ponding, and must be separated from the rest of the site by a grade break that eliminates or reduces run-on of stormwater. Concrete surfacing must extend a minimum of 6.5 feet from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus one foot, whichever is less. The fuel dispensing area shall be graded and constructed as to eliminate or reduce stormwater flow through the concrete fueling area. Spilled material within the fuel dispensing area must be prohibited from draining to the street or storm drain system, or offsite. Spills must be immediately cleaned up in accordance with a Spill Contingency Plan.

All fuel dispensing areas are to have a canopy structure, and the canopy's minimum dimensions must be equal to or greater than the area within the grade break or the fuel dispensing area, as defined above. Canopy roof downspouts are to be routed to eliminate or reduce drainage across the concrete fueling area. The fueling area shall

drain to the project's Treatment Control BMP(s) prior to discharging to the municipal storm drain system, or offsite (OC 2003).

Air/Water Supply Area Drainage
Areas used for air/water supply must be graded and constructed so as to contain spilled material for cleanup.

Maintenance Bays and Docks
Loading docks must be kept in a clean and orderly condition through a regular program of sweeping, litter control, and immediate cleanup of spills and broken containers. Polluted material or wash waters shall not be allowed to discharge into a storm drain.

Loading dock areas should be covered, or drainage should be designed to preclude urban run-on and runoff. Direct connections into storm drains from depressed loading docks (truck wells) are prohibited. Below-grade loading docks from grocery stores and warehouse/distribution centers of fresh food items should drain through water quality inlets, or to and engineered infiltration system, or an equally effective alternative reviewed and approved by the Agency.

Vehicle Washing Areas
In multi-family developments with 10 or more dwelling units, where car washing or rinsing is not specifically prohibited via CC&Rs or other acceptable means, and in developments having a common parking area where car washing or rinsing is not specifically prohibited via CC&Rs or other acceptable means, a designated car washing and rinsing area that does not drain directly to a storm drain shall be provided for common usage. Wash and rinse waters from this area must either be directed to the sanitary sewer (with prior approval of the sewering agency), to an engineered filtration system, or an equally effective alternative reviewed and approved by the Agency.

For businesses where washing or rinsing of vehicles or equipment without steam cleaning occurs, provide wash racks connected to the sewer in accordance with agency guidelines and with the prior approval of the sewering agency (Note: discharge monitoring may be required by the sewering agency). Surface runoff and roof drains shall be directed away from these wash racks. Where steam cleaning occurs, provide wash racks connected to the sewer in accordance with agency guidelines and with the prior approval of the sewering agency, and/or structurally contain (with a cover to restrict the entry of stormwater during rain events) runoff from such areas onsite for commercial waste removal.

Outdoor Material Storage Areas
Where plans propose outdoor storage containers for oils, fuels, solvents, coolants, wastes, and other chemicals, the areas where these materials are to be used or stored must be protected by secondary containment structures such as a low containment berm, dike, or curb, designed to the satisfaction of the approving Agency. For commercial outdoor vehicle and equipment salvage yards, and commercial outdoor recycling facilities, the entire facility must comply with the NPDES General Industrial Activities Storm Water Permit. Piles of materials or products that are stored outside and

that have the potential to cause pollutant discharges shall be protected from rainfall, runoff, run-on, and wind erosion.

Outdoor Work Areas
Where vehicle or equipment repair/maintenance occurs, impermeable berms, trench drains, or containment structures shall be provided around repair bays to eliminate or reduce spilled materials and wash-down waters from entering the storm drain system. Surface runoff or roof drains shall be directed away from these spill containment structures. Sidewalls and canopies may be used to meet this requirement.

Outdoor Processing Areas
Where wet material processing occurs (e.g., electroplating), secondary containment structures shall be provided to hold spills resulting from accidents, leaking tanks or equipment, or any other releases (Note: If these are plumbed to the sanitary sewer, the structures and plumbing shall be in accordance with State and local spill containment and reporting requirements and have the prior approval of the sewering agency). Outdoor process equipment operations such as rock grinding or crushing, painting or coating, grinding or sanding, degreasing or parts cleaning, landfills, waste piles, and wastewater and solid waste treatment and disposal, and other operations determined to be a potential threat to water quality by the permittees shall adhere to the following requirements:

1. Cover or enclose areas that would be sources of pollutants, or slope the area toward a sump that will provide infiltration or evaporation with no discharge; or, if there are no other alternatives, discharge of non-stormwater flow to the sanitary sewer may be considered only when allowed by the local sewering agency through a permitted connection.
2. Grade or berm area to prevent run-on from surrounding areas.
3. Installation of storm drains in areas of equipment repair is prohibited.
4. Other comparable or equally effective features that prevent unpermitted discharges to the municipal storm drain system.

Wash Water Controls for Food Preparation Areas
Food establishments (per State Health and Safety Code 27520) shall have contained areas, floor sink(s) and/or mop sink(s) with sanitary sewer connections for cleaning of kitchen floor mats and for disposal of wash waters containing kitchen and food wastes. The contained area shall also be covered to eliminate or reduce entry of stormwater. Adequate signs shall be provided and appropriately placed, that state the prohibition of discharging washwater to the storm drain system (OC 2003).

Alternate Material BMPs

Pervious Pavement
A pervious (porous) surface such as grass, modular pavers, or porous asphalt or concrete, must be used where appropriate (light vehicle loading areas) to reduce runoff.

Alternative Building Materials
Materials used to reduce potential sources of pollutants in stormwater runoff by eliminating compounds that can leach into runoff and reducing the need for pesticides, paints, and other materials are encouraged to be used.

2.5.3 Treatment Control BMPs

Minimizing a development's adverse effects on water quality can be most effectively achieved using a combination of Site Design, Source Control and/or Treatment Control BMPs. Where projects have been designed to eliminate or reduce the introduction of expected pollutants of concern into runoff from the project site through the implementation of Site Design and Source Control BMPs, the development may still have the potential for pollutants of concern to enter the MS4 or receiving waters. If all pollutants of concern are not adequately addressed by Site Design and Source Control BMPs, Treatment Control BMPs are required. Project WQMPs must be designed to minimize or eliminate pollutants in discharges from the project to achieve the appropriate standard, as specified in the Permit.

Where required, Treatment Control BMPs must be implemented unless equivalent treatment is provided as specified in Section 2.5.3, based on the infeasibility of Treatment Control BMPs. Treatment Control BMPs must be selected to address the identified pollutants and hydrologic conditions of concern and. Treatment control BMPs must be designed to treat the stormwater quality flow or the stormwater quality volume from a development, and must be located to treat the required runoff volume or flow prior to discharging to any receiving water. Treatment control BMPs may also be provided offsite or through a regional-based BMP.

Where approved regional or watershed management programs are available within the downstream watershed to address the pollutants of concern from new development and significant redevelopment, a project may participate in a regional- or watershed-based program. At this time, no regional- or watershed-based management programs are being proposed as part of this Model WQMP for Regional Board staff approval. Local implementation plans may include proposals for sub-regional programs for Regional Board staff approval (see Section 3, below). The regional or sub-regional plans are subject to public review and comments and may be presented to the Regional Board for consideration.

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[5] Sidewalk widths must still comply with Americans with Disabilities Act regulations and other life safety requirements.

[6] However, street widths must still comply with life safety requirements for fire and emergency vehicle access.

[7]However, projects must still comply with hillside grading ordinances that limit or restrict infiltration of runoff. Infiltration areas may be subject to regulation as Class V injection wells and may require a report to the USEPA. Consult the Agency for more information on use of this type of facility.

Table B-2 in Attachment B summarizes expected performance of Treatment Control BMPs in removing various pollutants of concern. For more specific information on the pollutant removal capabilities of various BMPs, refer to the California Stormwater Quality Association's, "Stormwater Best Management Practices Handbook for New Development and Redevelopment" (CASQA 2003). Table 2-3 lists Treatment Control BMPs and the primary design basis (flow-based or volume-based) to be used for designing BMPs. Sections 2.3.3.1 and 2.3.3.2 provide detailed guidance for determining the flow or volume of runoff from a project to be treated via Treatment Control BMPs.

The obligation to install treatment control BMPs at new development and redevelopment sites is met if, for a common scheme of development, BMPs are constructed with the requisite capacity to serve the entire common scheme, even if certain phases of the common scheme may not have BMP capacity located on that phase. BMP capacity must be functional before any phased work begins, thus may not be added on at the end of phased development.

Restrictions on the use of Infiltration BMPs (OC 2003)

Some Treatment Control BMPs that function by infiltration, may meet the definition of a Class V injection well; in these cases, it will be necessary to notify the USEPA, and the BMP shall not violate the requirements set forth in 40 CFR 144 for Class V Injection Wells.

Grading permits may limit or prohibit the use of infiltration BMPs in hillside or other special situations where slope stability and subsurface stability are of concern. Over time, infiltration may affect pre or post-development subsurface conditions, creating potential for instability.

It is also important to note that any drainage feature that infiltrates runoff poses some risk of potential groundwater contamination. Three factors significantly influence the potential for urban runoff to contaminate ground water. They are (1) pollutant mobility, (2) pollutant abundance in urban runoff, (3) and soluble fraction of pollutant. The risks associated with groundwater infiltration can be managed by:

- Designing landscape drainage features so that they promote infiltration of runoff, but do not inject runoff so that it bypasses the natural processes of filtering and transformation that occur in the soil. Take reasonable steps to prevent the illegal discharge of wastes to drainage systems.

  In general, designs that disperse runoff over landscaped areas or through permeable surfaces are the most effective, easiest to maintain, and have the lowest initial cost. These designs also minimize the risk of illegal disposal because the surface is visible and the infiltration rate per unit area is relatively low.

- For some sites, it may be feasible to use detention basins to infiltrate additional runoff in a more compact area, but the designer must consider the potential for illegal disposal of chemical spills. Detention basins should not drain to, or be located near, work areas where wash-water or liquid wastes are generated or where hazardous chemicals are stored. Detention basins should be clearly marked with "no dumping" signs and should be inspected regularly.

- The primary managed drinking water basins for the Permit area must be protected as a source of safe drinking water. SAWPA and member agencies are responsible for managing these groundwater resources. Planning and possible implementation of infiltration facilities must be coordinated with SAWPA or local water supply authority to ensure that stormwater BMPs do not contaminate groundwater.

- The risk of contamination of groundwater may be reduced by pretreatment of urban runoff. A discussion of limitations and guidance for infiltration practices is contained in Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration, Report No. EPA/600/R-94/051, USEPA (1994).

To protect groundwater quality, each Agency shall apply restrictions to the use of any Treatment Control BMPs that are designed to primarily function as infiltration devices (such as infiltration trenches and infiltration basins). As additional ground water basin data is obtained, Agencies, in coordination with SAWPA, may develop additional restrictions on the use of any BMPs that allow incidental infiltration.

At a minimum, use of structural Treatment Control BMPs that are designed to primarily function as infiltration devices shall meet the following conditions[8]:

1. Use of structural infiltration Treatment Control BMPs shall not cause or contribute to an exceedance of groundwater water quality objectives.
2. Pollution prevention and Source Control BMPs shall be implemented at a level appropriate to protect groundwater quality at sites where infiltration structural Treatment Control BMPs are to be used.
3. Structural infiltration Treatment Control BMPs shall not cause a nuisance or pollution, as defined in Water Code Section 13050.
4. Urban runoff from commercial developments shall undergo pretreatment to remove both physical and chemical contaminants, such as sedimentation or filtration, prior to infiltration.

5. All dry weather flows shall be diverted from infiltration devices except for those non-stormwater discharges authorized pursuant to 40 CFR 122.26(d)(2)(iv)(B)(1): diverted

[8] These conditions do not apply to structural Treatment Control BMPs which allow incidental infiltration and are not designed to primarily function as infiltration devices (such as grassy swales, detention basins, vegetated buffer strips, constructed wetlands, etc.)

stream flows, rising ground waters, uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to municipal storm drain systems, uncontaminated pumped ground water, foundation drains, springs, water from crawl space pumps, footing drains, air conditioning condensation, flow from riparian habitats and wetlands, water line flushing, landscape irrigation, discharges from potable water sources other than water main breaks, irrigation water, individual residential car washing, and dechlorinated swimming pool discharges.

6. The vertical distance from the base of any infiltration structural Treatment Control BMP to the seasonal high groundwater mark shall be at least 10 feet or as determined on an individual, site-specific basis by the Permittee. Where groundwater does not support beneficial uses, this vertical distance criterion may be reduced, provided groundwater quality is maintained. Reduction of vertical criterion should always be coordinated with SAWPA or other water supply authority and the RWQCB.

7. The soil through which infiltration is to occur shall have physical and chemical characteristics (such as appropriate cation exchange capacity, organic content, clay content, and infiltration rate) that are adequate for proper infiltration durations and treatment of urban runoff for the protection of groundwater beneficial uses.

8. Infiltration structural Treatment Control BMPs shall not be used for areas of industrial or light industrial activity; areas subject to high vehicular traffic (25,000 or greater average daily traffic on main roadway or 15,000 or more average daily traffic on any intersecting roadway) unless a site specific evaluation is conducted; automotive repair shops; car washes; fleet or RV storage areas (bus, truck, etc.); nurseries; and other high threat to water quality land uses and activities that may be designated by each Agency.

9. The horizontal distance between the base of any infiltration structural Treatment Control BMP and any water supply wells shall be 100 feet or as determined on an individual, site-specific basis by the Agency.

10. Any entity that implements a structural infiltration Treatment Control BMP shall be required to mitigate any groundwater contamination caused by the infiltration system.

Table 2-4
Treatment Control BMP Selection Matrix [1] (OC 2003)

Pollutant of Concern	Treatment Control BMP Categories							
	Biofilters	**Detention Basins[2]**	**Infiltration Basins[3]**	**Wet Ponds or Wetlands**	**Filtration**	**Water Quality Inlets**	**Hydrodynamic Separator Systems [4]**	**Manufactured/ Proprietary Devices**
Sediment/Turbidity	H/M	M	H/M	H/M	H/M	L	H/M (L for turbidity)	U
Nutrients	L	M	H/M	H/M	L/M	L	L	U
Organic Compounds	U	U	U	U	H/M	L	L	U
Trash & Debris	L	M	U	U	H/M	M	H/M	U
Oxygen Demanding Substances	L	M	H/M	H/M	H/M	L	L	U
Bacteria & Viruses	U	U	H/M	U	H/M	L	L	U
Oils & Grease	H/M	M	U	U	H/M	M	L/M	U
Pesticides (non-soil bound)	U	U	U	U	U	L	L	U

Table 2-4 (cont.)

(1) Cooperative periodic performance assessment may be necessary. This Treatment Control BMP table will be updated as needed and as knowledge of stormwater treatment BMPs improves. (2) For detention basins with minimum 36-48-hour drawdown time. (3) Including trenches and porous pavement. (4) Also known as hydrodynamic devices and baffle boxes.	L: Low removal efficiency; H/M: High or medium removal efficiency; U: Unknown removal efficiency Sources: Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (1993), National Stormwater Best Management Practices Database (2001), and Guide for BMP Selection in Urban Developed Areas (2001), California Stormwater BMP Handbook—New Development and Redevelopment (2003).
Biofilters include: ▪ Grass swales ▪ Grass strips ▪ Wetland vegetation swales ▪ Bioretention Detention Basins include: ▪ Extended/dry detention basins with grass lining ▪ Extended/dry detention basins with impervious lining Infiltration Basins include: ▪ Infiltration basins ▪ Infiltration trenches Wet Ponds and Wetlands include: ▪ Wet ponds (permanent pool) ▪ Constructed wetlands	Filtration Systems include: ▪ Media filtration ▪ Sand filtration Water Quality Inlets include: ▪ Trapping catch basins ▪ Oil water separators Hydrodynamic Separation Systems Include ▪ Swirl Concentrators ▪ Cyclone Separators Manufactured/Proprietary Devices include: ▪ Other proprietary stormwater treatment devices as listed in the CASQA BMP Handbook ▪ Effective stormwater BMPs not specifically listed in this WQMP and/or newly developed treatment devices—treatment efficiencies are unknown but must be determined if proposed in the WQMP

Flow Based Treatment Control BMPs

Vegetated Buffer Strips

Vegetated buffer strips require frequent landscape maintenance. Maintenance requirements typically include grass or shrub-growing activities such as irrigation, mowing, trimming, removal of invasive species, and replanting when necessary. Consider use of duplicate facilities such that one one-half of the facility can be taken out of service to allow for maintenance without reducing the required level of treatment performance. This is especially helpful for vegetated buffer strips that need to be dry before they can be mowed.

Vegetated Swales

Vegetated swales require a thick vegetative cover to function properly. Vegetative swales usually require normal landscape maintenance activities such as irrigation and mowing to maintain pollutant removal efficiency. The application of fertilizers and pesticides should be minimized. Consider use of duplicate facilities such that one one-half of the facility can be taken out of service to allow for maintenance without reducing the required level of treatment performance. This is especially helpful for vegetated swales that need to be dry before they can be mowed.

Multiple Systems

Multiple systems require separate treatment processes for each of the BMPs.

Bioretentions

Bioretentions require frequent landscape maintenance, including measures to ensure that the area is functioning properly.

Hydrodynamic Separator Systems

Hydrodynamic separator systems are a particular type of manufactured/proprietary system. Check California BMP Handbook or particular manufacturer for details on operation and maintenance.

Volume Based Treatment Control BMPs

Wet Ponds

Wet ponds require the removal of sediment occasionally and adequate resources must be committed to properly maintain peripheral aquatic vegetation, control vector production, and maintain effective pool volume, in order to maintain the pond's design capacity. A proactive and routine preventative maintenance plan is crucial to minimizing vector habitat. A vegetated buffer should be preserved around the pond to protect the banks from erosion and provide some pollutant removal before runoff enters the pond by overland flow.

Constructed Wetlands

Constructed wetlands require a continuous base flow to maintain aquatic plants. Salts and scum can accumulate in wetlands and, unless properly designed and managed, can

be flushed out during larger storms. Wetlands can become a breeding area for mosquitoes and midges unless carefully designed and maintained. A proactive and routine preventative maintenance plan is crucial to minimizing vector habitat.

Extended Detention Basin
Extended detention basins require inspection semi-annually and after significant storm events to identify potential problems early. Most maintenance efforts will need to be directed toward vegetation management and vector control, which may focus on basic housekeeping practices such as removal of debris accumulations and vegetation management to ensure that the basin dewaters completely, within 72 hours, to prevent creating vector habitats.

Water Quality Inlet
Water quality inlet (WQI) maintenance is site-specific due to variations in sediment and hydrocarbon by-products which may require disposal as hazardous waste. Establishment of a maintenance schedule is helpful for ensuring proper maintenance, because the WQIs are underground and can easily be neglected. High sediment loads can interfere with the ability of the WQI to effectively separate oil and grease from the runoff.

Retention/Irrigation
Retention/irrigation requires frequent inspection and maintenance to verify proper operation of these facilities. Pollutant removal rates are estimated to be nearly 100% for all pollutants in the captured and irrigated stormwater volume.

Infiltration Basin
Infiltration basins perform better in well-drained permeable soils. Infiltration basins in areas of low permeability can clog within a couple of years, and require more frequent inspection and maintenance. The use and regular maintenance of pretreatment BMPs (e.g., settling basin or filtering method) will significantly minimize maintenance requirements for the basin. Spill response procedures and controls should be implemented to prevent spills from reaching the infiltration basin.

Particular care is required in new developments where the area upstream of the infiltration BMP may not be fully stabilized, or in existing developments where upstream areas may become destabilized due to construction work, lack of maintenance, fire, or other actions. In these cases, measures to prevent sediment from entering and clogging the BMP are necessary until the drainage area is stabilized.

This BMP may require groundwater monitoring. Basins should not be put into operation until the upstream tributary area is stabilized.

Infiltration Trench
Infiltration trenches require an effective pretreatment, such as vegetated buffer strips, to remove sediment and minimize clogging. If the trench clogs, it may be necessary to remove and replace all or part of the filter fabric and possibly the coarse aggregate. Maintenance should be concentrated on the pretreatment practices, such as buffer strips

and swales upstream of the trench to ensure that sediment does not reach the infiltration trench.

Particular care is required in new developments where the area upstream of the infiltration BMP may not be fully stabilized, or in existing developments where upstream areas may become destabilized due to construction work, lack of maintenance, fire, or other actions. In these cases, measures to prevent sediment from entering and clogging the BMP are necessary until the drainage area is stabilized.

Regular inspection should determine if the sediment removal structures require routine maintenance. Infiltration trenches should not be put into operation until the upstream tributary area is stabilized.

Media Filter
Media filters clog easily when subjected to heavy sediment loads. Sediment reducing pretreatment practices, such as vegetated buffer strips or vegetated swales, placed upstream of the filter should be maintained properly to reduce sediment loads into the filter. Media filters should drain within 72 hours to minimize vector habitat. Maintenance will need to focus on basic housekeeping practices such as removal of debris accumulations and vegetation management (within media filter) to prevent clogs and/ or standing water. Materials such as sand, gravel, filter cloth, or filter media must be disposed of properly and in accordance with all applicable laws.

Manufactured/Proprietary Devices
This category may include new or little-known stormwater treatment technologies that may be effective. This guidance intends to allow consideration of new and more effective BMP technology as it becomes available.

2.5.3.1 Flow-Based Design

Flow-based BMP design standards apply to BMPs whose primary mode of pollutant removal depends on the rate of flow of runoff through the BMP. The Permit specifies sizing criteria that must be used to design structural BMPs for a project. Project proponents must design flow-based BMPs using the following method.

Determining Flow Treatment Requirements
The following steps describe the approach for application of the flow-based BMP design criteria:

- **Identify the drainage area** that drains to the proposed BMP. This includes all areas that will contribute runoff to the proposed BMP, including pervious areas, impervious areas, and runoff from off-site areas that commingle with site runoff, whether or not they are directly or indirectly connected to the BMP. Calculate this area in units of acres.

- **Determine rainfall intensity criteria** using the 'Cumulative Frequency Hourly Rainfall Intensity' Curve in Attachment D. Use the rainfall intensity corresponding to the cumulative probability specified in the Permit (85%). Using the curve,

determine the rainfall intensity corresponding to the 85% percentile. Multiply the intensity by the safety factor specified in the criteria, usually 2, to calculate the "Design Rainfall Intensity."

- **Calculate the composite runoff coefficient "C-Factor**" for the BMP Drainage Area. Obtain individual C-Factors from the local agency or from the local flood control district: if C-Factors are not available locally, obtain factors from hydrology text books or estimate using Table B-3 in Attachment B. Composite the individual C-Factors using area-weighted averages.

- **Calculate the BMP design flow** by using the Rational Formula (Q = CiA). Using the BMP Drainage Area, the Design Rainfall Intensity, and the composite runoff coefficient (C-Factor), apply the Rational Formula (see Table 2-5 below for use limitations for the Rational Formula). The result is the BMP Design Flow.

Q = CiA, where:

Q = BMP Design Flow (ft3/s)

i = Rainfall Intensity (in/hr)

A = BMP Drainage Area (Acres)

C = C-Factor (runoff coefficient)

Table 2-5

Use of Rational Formula for Stormwater BMP Design (CASQA 2003)

	Composite Runoff Coefficient, "C"			
BMP Drainage Area (Acres)	**0.00 to 0.25**	**0.26 to 0.50**	**0.51 to 0.75**	**0.76 to 1.00**
0 to 25	**Caution**	**Yes**	**Yes**	**Yes**
26 to 50	**High Caution**	**Caution**	**Yes**	**Yes**
51 to 75	**Not Recommended**	**High Caution**	**Caution**	**Yes**
76 to 100	**Not Recommended**	**High Caution**	**Caution**	**Yes**

If the Rational Formula use case, as determined by Table 2-5, shows "High Caution" or "Not Recommended", considering the project's characteristics, the project proponent must calculate the BMP design flow using the unit hydrograph method, as specified in the San Bernardino County Hydrology Manual (1986).

2.5.3.2 Volume-Based Design

Volume-based BMP design standards apply to BMPs whose primary mode of pollutant removal depends on the volumetric capacity of the BMP. Volume-based Treatment Control BMPs shall be designed to infiltrate or treat the design volume of runoff. The Permit specifies sizing criteria that must be used to design structural BMPs for a project. Project proponents must design volume-based BMPs using the following method.

Determining Volume Treatment Requirements
Use the following steps to design a volumetric-based stormwater quality BMP:

- **Determine the BMP Drainage Area** that drains to the proposed BMP. This includes all areas that will contribute runoff to the proposed BMP, including pervious areas, and runoff from off-site areas that commingle with site runoff, whether or not they are directly or indirectly connected to the BMP. Calculate this area in acres.

- **Calculate the composite runoff coefficient "C-Factor"** for the BMP Drainage Area. Obtain individual C-Factors from the local agency or from the local flood control district: if C-Factors are not available locally, obtain factors from hydrology text books or estimate using Table B-3 in Attachment B. Composite the individual C-Factors using area-weighted averages.

- **Determine the applicable requirement for capture of runoff**. For San Bernardino County design to capture 80% of runoff.

- **Determine the Unit Basin Storage Volume** by using the 'Capture/Treatment Analysis' Curves in Attachment D corresponding to the desired drain down time. Curves are presented for 24 hour and 48 hour draw down times. The 48 hour curve should be used in most areas of California. Draw down times in excess of 48 hours should be used with caution as vector breeding can be a problem after water has stood in excess of 72 hours. (Use of the 24 hour curve should be limited to drainage areas with coarse soils that readily settle and to watersheds where warming may be detrimental to downstream fisheries.) Enter the capture curve on the vertical axis at the 80% capture value. Move horizontally to the right across capture curve until the curve corresponding to the drainage area's composite runoff coefficient "C-Factor" determined is intercepted. Interpolation between curves may be necessary. Move vertically down from the point of interception to the horizontal axis. Read the Unit Basin Storage Volume on the horizontal axis.

- **Calculate the required capture volume of the BMP** by multiplying the BMP Drainage Area by the Unit Basin Storage Volume to give the BMP volume*. Due to the mixed

units that result (e.g., ac-in., ac-ft) it is recommended that the resulting volume be converted to cubic feet for use during design.

*** Sample calculations will be developed and included in the Model WQMP by May 15, 2004.**

2.5.4 Equivalent Treatment Control Alternatives

Where on-site Treatment Control BMPs are determined to be infeasible or impracticable, and approved Regional-based treatment program is not feasible, equivalent off-site treatment must be provided. Equivalent off-site treatment shall only be approved if the cost of technically feasible on-site treatment BMPs greatly outweighs the pollution control benefits. If an equivalent treatment alternative is approved, the approving Agency must notify the RWQCB in writing within 30 days, and include the approval documentation and a copy of the project WQMP. Off-site treatment controls must meet the following conditions:

- Treatment Control BMPs must be located in the same watershed as the project site.
- Treatment Control BMPs must treat a volume and/or flow equal to or greater than the treatment volume and/or flow calculated for the project site using the guidance in this WQMP.
- Treatment Control BMPs must treat a pollutant loading equal to or greater than the pollutant loading from the project site.
- Treatment Control BMPs must address the pollutants of concern and hydrologic conditions of concern for the project site.
- Off-site Treatment Control BMPs shall not discharge directly to sensitive habitat or to impaired receiving waters; or cause localized water quality impairment or increase loading of pollutants of concern.
- Treatment Control BMPs located off-site must be operational prior to the construction phase of the new development or redevelopment project.
- Site Design BMPs and Source Control BMPs must continue to be implemented at the project site in accordance with this WQMP.

Subject to approval by the Agency, off-site Treatment Control BMPs with excess capacity may be used to meet the treatment needs of additional projects as long as each project meets the requirements of this section and such that the requirements are met when the projects are combined. For example, if the treatment volume for Project 1 is V=A and the treatment volume for Project 2 is V=B, then an off-site treatment control BMP would need to have a treatment volume capacity of at least V=A+B in order to treat the runoff from both Project 1 and Project 2. Similar provisions apply for flows and pollutants.

The provisions in this Section are supplemental to the provisions in Section 3 for regionally-based water quality control programs. While similar in nature, the provisions in Section 2.3.4 are intended to be implemented primarily on a smaller, more local basis. For example, a single developer of separate but adjacent projects might utilize the provisions of this section to propose that controls for both projects be located on one of the two separate sites, or possibly even propose that the controls for both sites be located on a third site.

2.6 Operations and Maintenance

Operation and maintenance (O&M) requirements for all source control and treatment control BMPs shall be identified in the WQMP. Various possible maintenance mechanisms are described in Attachment A-1. The WQMP shall include the following:

- Identification of each BMP that requires O&M.
- Thorough description of O&M activities, the O&M process, and the handling and placement of any wastes.
- BMP start-up dates.
- Schedule of the frequency of O&M for each BMP.
- Identification (including name, address, contact name and contact information such as telephone number and email address) of the responsible parties for O&M, including a written agreement with the entities responsible for O&M.
- Self-inspections and record-keeping requirements for BMPs (review local specific requirements regarding self-inspections and/or annual reporting), including identification of responsible parties for inspection and record- keeping.
- Thorough descriptions of water quality monitoring (if locally required).
- Signed statement (with date) accepting responsibility for maintenance, repair, replacement, and inspection of BMPs. O&M requirements must be transferred to future site owners as described in Section 4.2.
- Local jurisdictions should have authority to maintain the BMP, if necessary, and invoice the owner for costs.

2.7 Funding

A funding source or sources for the O&M of each BMP identified in the WQMP must be identified. By certifying the WQMP (see Section 2.1), the applicant is certifying that the funding responsibilities have been addressed and will be transferred to future site owners. An example of how to adhere to the requirement to transfer O&M responsibilities might be to record the WQMP against the title to the property.

2.8 Permit Closeout Requirements (OC 2003)

For discretionary projects, the Agency-approved method of stormwater BMP maintenance shall be incorporated into the project's permit, and shall be consistent with permits issued by resource agencies, if any. The Agency will make a determination that all requirements of the Project WQMP have been satisfactorily completed prior to closeout of permits and issuance of certificates of use and occupancy.

For projects requiring only ministerial permits, the Agency-approved method of stormwater BMP maintenance shall be shown on the project plans before the issuance of any ministerial permits. Verification will occur similar to discretionary projects.

In all instances, the project proponent shall provide proof of execution of an Agency-approved method of maintenance, repair, and replacement before the issuance of construction approvals, permit closeout and issuance of certificates of use and occupancy. Agencies carrying out public projects that are not required to obtain permits shall be responsible for ensuring that an Agency-approved method of stormwater BMP maintenance repair and replacement is executed prior to the completion of construction. For all properties, the verification mechanism will include the project proponent's signed statement, as part of the project application, accepting responsibility for all structural BMP maintenance, repair and replacement, until an Agency-approved entity agrees to assume responsibility for structural BMP maintenance, repair and replacement, or an alternative mechanism is approved by the Agency regarding maintenance, repair and replacement of the structural BMP.

Section 3
Regional-Based Water Quality Control

The Permit encourages regional and/or watershed management programs that address runoff from new development and significant redevelopment. Regional-based treatment control BMPs (RBMPs) may provide a more effective and cost efficient runoff treatment control mechanism for multiple new development and redevelopment projects within a watershed or sub-watershed drainage area. When RBMPs are utilized, all Category projects must implement Site Design BMPs (per Section 2.5.1.1) and Source Control BMPs (per Section 2.5.1.2). RBMPs can treat stormwater from several source areas at a single or multiple downstream location(s). This approach can be effective when limited space is available for structural treatment control BMPs in new development and redevelopment areas. The goal of RBMPs is to treat runoff from any existing development in addition to the new and redevelopment.

Regionally-based treatment control BMPs will be considered for acceptance by the Agency as an alternative to on-site measures if the project applicant demonstrates the following:

- One or more Agencies (or, in some cases another agency) has prepared a regional or watershed plan to determine where on-site and/or regional or watershed Treatment Control BMP facilities are appropriate and it has been approved by each Agency intending to utilize the Treatment Control BMP facilities as part of the new development/significant redevelopment program. During the term of the Permit, the Executive Officer, after notice to interested parties, must make a determination that the regional or watershed treatment BMP exceeds the water quality solution provided by the onsite structural BMPs otherwise required by section XII B 3 of the Permit and is otherwise consistent with the Permit and the Clean Water Act. The request for determination should be made as early in the design process as possible.

- The regionally-based treatment control BMP addresses the project's pollutants of concern (after considering site design and source control BMPs that must still be implemented at the project site).

- Any pollutants of concern from the project, that will not be adequately treated by the RBMP, must be addressed in the project WQMP with onsite BMPs.

- The project proponent identifies the party responsible for the operation, maintenance, and administration of the regionally-based treatment control.

- The applicant has secured rights to participate in the regionally-based BMP solution.

- The applicant has met all of the requirements imposed for participation in the regionally-based BMP, including funding and operation and maintenance requirements, and contingency planning.

- The regionally-based BMP will be-on line, operable, and ready to receive flows from the project site prior to issuance of grading permits, building permits, or occupancy permits.

- The regional- or watershed-based Treatment Control BMPs must be sized and selected to meet the following criteria:

  - The regional or watershed Treatment Control BMP(s) collectively must have the capacity to treat more than the cumulative volume (or flow rate) of runoff from all new development or significant redevelopment projects included in the regional or watershed plan, calculated using the applicable project-based water quality design volume or flow rate from each project. The water quality design storm runoff volume or flow rate obligation for projects participating in the regional or watershed program may be reduced based on the incorporation of any Site Design BMPs that offset treatment requirements for pollutants of concern.

  - Treatment Control BMP selection will be determined as part of the regional or watershed program planning. Regional or watershed Treatment Control BMPs must be selected to address pollutants of concern in the downstream receiving waters and anticipated to be generated from the type of new development or significant redevelopment within the watershed in accordance with the selection procedures in **Section 2.5.3**. In the alternative, individual projects that intend to rely on the regional or watershed treatment facility must incorporate site-specific BMPs to address any specific pollutant of concern from that project that is not addressed by the regional or watershed Treatment Control BMPs.

- The regional or watershed Treatment Control BMPs should be sized consistent with site constraints and opportunities with the goal of treating runoff volume (or flow rate) from the developed areas of the watershed in addition to the new development or significant redevelopment.

- Site Design BMPs and Source Control BMPs are implemented at the project site as required in Sections 2.5.1 and 2.5.2.

- The BMPs in a regional or watershed program with impaired waterbodies and/or watersheds subject to Total Maximum Daily Loads are to address the applicable implementation requirements of any adopted TMDLs.

- Waters of the United States will not be utilized to transport untreated runoff to the regional facility.

Projects participating in regional water quality management programs may rely upon the regional program during the discretionary review process subject to a discussion of how a project will participate in the program. The WQMP must identify its stormwater contribution to the regional program and how it will affect cumulative water quality impacts in the regional watershed. Removal effectiveness, cost, maintenance, and construction timing affect whether a regional-based approach is more appropriate than site-specific approaches.

Section 4
Changes in Site Development or Ownership

4.1 Changes in Site Development

The WQMP must be updated to reflect any changes in site development plans. Significant changes in the site's runoff characteristics may occur whenever site work requiring a grading permit is proposed or where exterior work requiring a building permit is proposed. Under these circumstances, the developer shall contact the Agency and provide sufficient information for the Agency to determine whether the existing WQMP is still appropriate: if deemed inappropriate for proposed conditions, the developer shall revise the WQMP to address the cumulative changes to the site and submit the revised WQMP to the Agency for review and approval prior to issuance of permits. Significant changes in the site's runoff characteristics are expected to occur whenever there is a change in use necessitating a conditional use permit (for example, changing from retail to restaurant), or when proposed changes to the site fall into one or more of the project categories listed in Table 1-1. Under these conditions, a revised or completely new WQMP shall be developed and submitted for approval in accordance with this guidance document.

4.2 Changes in Site Ownership

For sites with a fully implemented WQMP, the WQMP requirements shall be transferred to all future owners of the project site. Recording the WQMP requirements against the title to the property is one way to effectively notify potential buyers and future owners of properties of their responsibilities for the WQMP. New owners have the option to adopt the existing WQMP, to amend the WQMP, or to develop a new WQMP. If the WQMP is amended or if a new WQMP is developed, the amended or new WQMP must be in accordance with this guidance document, must address cumulative changes to the project site, and must be submitted to the Agency for approval. (A template agreement for responsibility transfer to new owners will be provided as an attachment by May 15, 2004.)

Section 5

Alternative Approaches for Treatment Control BMPs

5.1 Site Design Stormwater Treatment Credits (OC 2003)
Any Agency and/or the Principal Permittee may develop and submit for public review and Regional Board approval, a regional Model Site Design Stormwater Treatment Credits program that allows reductions in the volume or flow of stormwater that must be captured or treated on a project in return for the inclusion of specified project design features in the project. The Model Site Design Stormwater Treatment Credits program shall be deemed part of this Model WQMP following Regional Board approval.

Any such model program shall specify the conditions under which project proponents can be credited for the use of Site Design BMPs and low impact development techniques that can reduce the volume of stormwater runoff, preserve natural areas, and minimize the pollutant loads generated and potentially discharged from the site. Any Site Design Stormwater Treatment Credits program implemented by a Permittee within its jurisdiction shall be consistent and compliant with this model approved by the Regional Board.